

above-stated objects. The valve has inlet sealing surfaces withing the valve fitting that engages a supply fitting of a source of pressurized gas at the closest possible location to the supply inlet. The remaining volume of the inlet is reduced by substantially filling that volume with a pin, leaving a thin annulus for gas to pass into the system. This geometry helps preserve the downstream gas purity and will significantly reduce the required amount of purge gas.

The valve of the present invention maintains a sufficient positive internal pressure to ensure that air does not migrate into the high purity gas regions. Furthermore, gas is not allowed to enter the high purity regions until a sufficiently high supply pressure is attached to the system. As an added safety feature, the valve of the present invention permits flow to automatically throttle itself at very high rates in the event of a massive leak.

Brief Description of the Drawing Figures

Figure 1 is a schematic showing the overall system embodying the present invention.

Figure 2 is a flow versus time curve showing a rectangular pulse delivery.

Figure 3 is a flow versus time curve showing a pulse delivery with delivered gas flow rate proportional to inspiratory flow rate.

Figures 4A-4C show a connector for connecting an electrical circuit and therapeutic gas to an entrainment cell embodying the